

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 31 MAY 2005

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Applicant's or agent's file reference PCT321	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/KR2003/002775	International filing date (day/month/year) 18 DECEMBER 2003 (18.12.2003)	Priority date (day/month/year) 06 JANUARY 2003 (06.01.2003)
International Patent Classification (IPC) or national classification and IPC IPC7 C03B 33/09		
Applicant RORZE SYSTEMS CORPORATION et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 30 JULY 2004 (30.07.2004)	Date of completion of this report 25 APRIL 2005 (25.04.2005)
Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer KANG, SANG YOON Telephone No. 82-42-481-8153 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR2003/002775

I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☐ the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the claims:
pages _____, as originally filed
pages _____, as amended (together with any statement) under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the drawings:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language English which is

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☒ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION

International application No.

PCT/KR2003/002775

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	1~11	YES
	Claims		NO
Inventive step (IS)	Claims	1~11	YES
	Claims		NO
Industrial applicability (IA)	Claims	1~11	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

D1 JP 2001-113384 A (Koikesansokogyo Co. Ltd.) 24 April 2001

D2 JP 10-323779 A (Hitachi Cable Ltd.) 08 December 1998

The present invention(henceforth PI) is a glass plate cutting machine with laser beam provided to improve the uneven glass section and slanted cutting. D1 describes the laser beam cutting method and device for reducing a heat-affected area which is caused on a material to be cut by a laser beam. D2 provides the method of evaporation cutting or split cutting of a Si substrate.

1. Novelty

Claims 1-11 are novel.

D1 and D2 use CO₂ laser beam and cooling means to cut the object as PI do. However, none of D1 and D2 has the features of controlling the plane irradiation density and volume irradiation density. Therefore Claim 1-11 are novel.

2. Inventive step

Claims 1-11 involve an inventive step.

D1 and D2 both relate to cutting the object with laser beam and cooling means. D1 uses air, inert gas, carbon dioxide gas, or their mixed gas as a cooling gas. Also D2 sprays the gas to cool the Si substrate quickly right after stopping the irradiation of the laser beam. However, PI uses cooling fluid to quench the glass plate.

PI limits the range of plane irradiation density and volume irradiation density which control the quality of cutting plane. If the plane irradiation density is less than 0.05 joule/mm², the scribe line is not formed due to the shortage of energy. The zigzagged pattern of scribe line is seen in exceeding the plane irradiation density 2 joule/mm². As for volume irradiation density, same discussion can be applicable.

Therefore, Claims 1-11 involve an inventive step.